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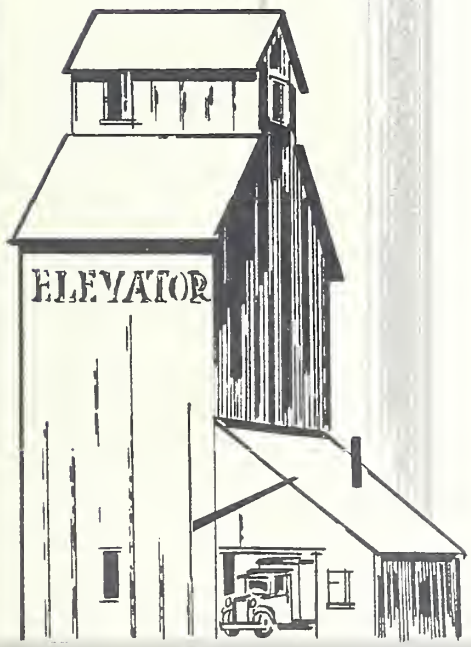
CHANGING GRAIN MARKET CHANNELS



UNITED STATES DEPARTMENT OF AGRICULTURE
ECONOMIC RESEARCH SERVICE
MARKETING ECONOMICS DIVISION
WASHINGTON, D.C.

ERS-39

PREFACE

The study reported here was undertaken by the U. S. Department of Agriculture to determine the present marketing channels through which U. S. grain moves from the farmer to the consumer. This report describes in broad terms the changes which have taken place since 1939. A more detailed analytical report of the structure of individual firms will be published following a study now being made in cooperation with the North Central Grain Marketing Research Committee.

Data for this study were obtained from many sources, including the North Central Regional Grain Marketing Research Committee, Chicago Board of Trade, U. S. Bureau of the Census, U. S. Department of Agriculture, and several trade publications.

Previous work on this subject was published by the U. S. Department of Agriculture in Technical Bulletin 934, Marketing Margins and Costs for Grains, Grain Products, and Dry Edible Beans, in August 1947, based on 1939 data.

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November 1961

SUMMARY

Grain marketing channels change in many different ways over a long period of time. A combined analysis of wheat and the five major feed grains--corn, oats, barley, sorghum grain, and rye--indicated changes both in volume and in structure of the grain market. These changes were found to alter old channels as well as to create new ones.

Total production of all grains increased from 112.4 million tons in 1939 to 185.7 million tons in 1959. Because all the increased production could not be utilized on the farm, off-farm sales increased from 40 million tons (37.7 percent of total production) in 1939 to 95.8 million tons (51.6 percent of total production) in 1959. Of the wheat production, farmers sold only 79 percent in 1939 compared to an estimated 100 percent (due to a reduction of stocks on farms) in 1959.

Changes in size and number of country elevators as well as in their functions caused some of them to be reclassified as subterminal elevators. Therefore, in many cases while grain was channeled into the same establishment as in 1939, it was considered to be entering a subterminal elevator in 1959 rather than a country elevator. These changes in market organization resulted in a slightly larger percentage of off-farm sales of grain bypassing country elevators.

The establishment of subterminal elevators in the producing regions led to the decentralizing of the secondary elevators. This was apparent particularly in the wheat producing regions, where in 1959 subterminal elevators handled a large percentage of the grain that was formerly handled by the larger secondary elevators.

Over three times as much grain was processed and manufactured into prepared animal feeds in 1959 as in 1939. This increase resulted in new channels to some areas of the United States and increased volumes flowing through old channels. Increased demand for prepared animal feeds was the major factor which led farmers to sell 38 percent of the feed grains they produced and to repurchase 51 percent of the off-farm sales in 1959.

The volume of wheat exported increased from 1.1 million tons in 1939 to 13.3 million tons in 1959. Exports of feed grains increased over 600 percent, from 1.7 million tons in 1939 to 11.9 million tons in 1959. The opening of the Saint Lawrence Seaway created a new channel of distribution for exported grain.

Another change in the grain flow was at the wheat processing level. Old channels supplying wheat flour to consumers were greatly reduced in volume. New channels were created which supplied wheat in the form of prepared flour, flour mixes, and bakery products.

The Commodity Credit Corporation was also a new channel through which grains were moved. The CCC began to buy large quantities of grain in the mid 1950's and has continued to do so. Action by the CCC not only created a new channel, but also affected old channels by storing grain in commercial channels. CCC-owned stocks accounted for 65.2 percent of the total off-farm stocks in commercial storage as of January 1, 1959.

Although there were some important changes in the grain marketing channels between 1939 and 1959, many of the changes were necessitated solely because of the great increase in off-farm sales. An increased volume of grain flowing through an old channel is to be expected in a period of increasing off-farm sales. A decreased volume of grain flowing through an old channel during a similar period would not be expected, and it might be quite significant if it occurred.

CHANGING GRAIN MARKET CHANNELS

By Walter G. Heid, Jr., Agricultural Economist,
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INTRODUCTION

The flow of grain through channels from the producer to the consumer is a continually changing process. Changes occur gradually and over a long period of time. Marketing channels are affected by many factors such as total grain production, shifts in population, new technology, changes in farming operations, engineering feats such as new highways and the Saint Lawrence Seaway, new markets at home and abroad, and competitive advantages. Changes in marketing channels may, for example, be causes or results of mergers, consolidations, integrations, and liquidations or additional entries into the industry. Such changes usually influence the efficiency of the marketing system in all of its functions. Information on the nature and extent of changes can affect decisions of marketing firms and their operations.

The agencies which handle the grain and perform the delivery, processing, and storage services from the time the grain is sold off the farm until it is purchased by the consumer constitute the marketing channels. Primarily, these agencies include (1) country elevators and handlers or truckers, which are the primary farm outlets, (2) brokers, agents, and dealers, (3) subterminal, terminal, and port elevators which are the secondary farm outlets, (4) processors of food, feed, and industrial products, (5) wholesalers and retailers, (6) exporters, and (7) in recent years storages owned or controlled by the Commodity Credit Corporation. Grain may pass through any number of these channels, depending on its ultimate disposition and other factors.

The objectives of this primarily descriptive study are (1) to estimate the volumes of grain that flowed through various marketing channels in 1959 and contrast the volumes with estimates for earlier years, (2) to indicate some of the major forces causing the changes that have occurred, and (3) to suggest some of the possible effects of these changes on grain marketing in the future.

Comparisons with earlier years present certain problems because the marketing agencies have not always been defined in the same way. Efforts have been made in this report to overcome the difficulty.

The results of this study are summarized in three sections. The first section presents a comparison of 1939 and 1959 marketing channels using 1939 definitions. In the second and third sections the 1959 marketing channels for wheat and feed grains are analyzed by using current definitions insofar as available data permit delineation of the separate marketing channels. These analyses consider the volumes which flow through each segment or agency of our marketing system. These volumes of flow are in a sense net movements in and out of each segment or agency since they do not consider, for example, movements among country elevators or among terminal elevators.

Throughout this report both new channels and volume changes in old channels are discussed. Volumes are shown as tonnages and as percentages of off-farm

sales. Because of the great increase in off-farm sales between 1939 and 1959, percentages of off-farm sales moving through the various channels are better indications of change than the actual tonnages.

CHANGING MARKETS

Grain marketing has changed because larger volumes of grain are being handled, and because new marketing channels have been opened. The nature and effects of the changes on each segment of the grain trade are analyzed in this section.

Off-Farm Sales

Off-farm sales include the grain sold by farmers to a marketing agency or a representative thereof. The grain may return to farms later. Farmers may repurchase it in the form of whole grain for feed, prepared animal feed, millfeeds, or seed.

Total off-farm sales of all grains more than doubled between 1939 and 1959 (table 1). Production of all grains increased 61 percent from 1939 to 1959. Besides the increasing production, factors contributing to the growing sales volume include mechanization and specialization in farming, separation of grain production and feeding areas, and the increasing speed of harvest. The various segments of the grain marketing channels have had to make changes to handle the larger volume of grain.

Methods of disposition of off-farm sales also changed between 1939 and 1959 (fig. 1 and table 2). Volumes flowing into both primary and secondary elevators increased. The primary farm outlet continued to be the country elevators, which received about 34.4 million tons of grain in 1939 and 79.8 million tons in 1959. Also, in 1959 about 2.5 million tons of grain were channeled into CCC-owned storage, which did not exist in 1939.

According to D. R. Stokes, processors received 3.6 million tons of all grain directly from farms in 1939. 1/ Most of the grain sold to processors was considered to flow through an agency or representative in 1959.

Country Elevators

Country grain elevators are primarily engaged in receiving grain from farmers by truck for future delivery to a secondary elevator or processor. Country elevators, which serve as the primary outlet for grain sold off farms, are widely distributed throughout the grain-producing regions of the United States. They perform many services necessary in grain marketing, such as grading, segregating good grain from poor grain, storing, grinding, and mixing. They also serve as retail feed and farm supply outlets.

Country elevators, as considered in this study, are establishments which (1) handle at least 10,000 bushels of whole grain per year, (2) receive over 50 percent of their supply of whole grain directly from farmers, and (3) sell at least 50 percent of their supply in the form of whole grain.

1/ Stokes, D. R. Marketing Margins and Costs for Grains, Grain Products, and Dry Edible Beans. U. S. Dept. Agr., Tech. Bul. 934, Aug. 1947.

Table 1.--Wheat and feed grains: Production, sales off farms, and sales off farms as percentage of production, 1939, 1949, and 1959

Commodity	1939			1949			1959		
	Production	Sales off farms: Volume	Sales off farms: Percent of Production	Production	Sales off farms: Volume	Sales off farms: Percent of Production	Production	Sales off farms: Volume 1/	Sales off farms: Percent of Production
	Mil. bu.	Mil. bu.	Percent	Mil. bu.	Mil. bu.	Percent	Mil. bu.	Mil. bu.	Percent
Wheat	741.2	588.0	79.3	1,098.4	949.8	86.5	1,126.7	1,131.0	100.4
Corn	2,341.6	672.3	28.7	2,946.2	923.7	31.4	3,909.4	1,367.0	35.0
Oats	957.7	154.3	16.1	1,220.1	276.2	22.6	1,066.4	318.0	29.8
Barley	278.2	106.5	38.3	237.1	144.6	60.8	422.1	300.0	71.1
Sorghum grain	53.3	11.8	22.1	148.5	105.4	70.9	585.3	433.0	74.0
Rye	38.6	19.7	51.0	18.1	12.5	66.7	22.3	17.0	76.2
Total	4,410.6	1,552.6	35.2	5,668.4	2,412.2	42.6	7,132.2	3,566.0	50.0
	Mil. tons	Mil. tons		Mil. tons	Mil. tons		Mil. tons	Mil. tons	
Total	112.4	40.0	37.7	144.9	65.2	45.0	185.7	95.8	51.6

1/ Adjusted to include changes in on-farm stocks.

Compiled from Agricultural Statistics--1960, U. S. Dept. Agr., 1961; and Field and Seed Crops Production, Farm Use, Sales, Value by States--1959-60, U. S. Dept. Agr., Statis. Rptg. Serv., May 1961.

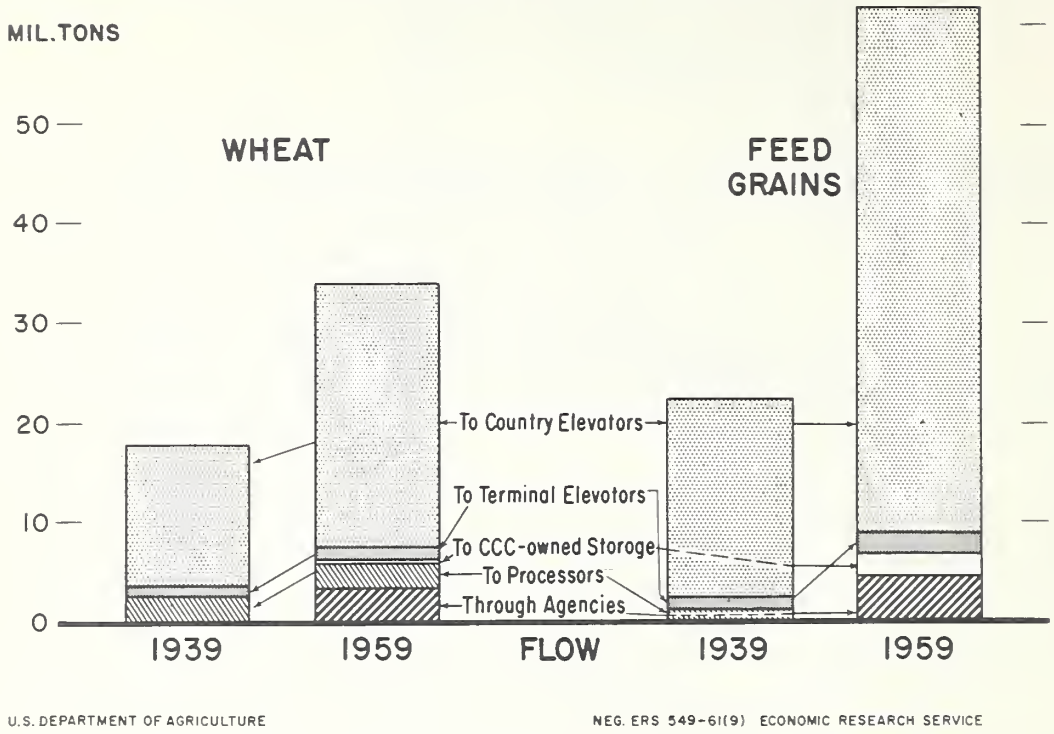


Figure 1

While the definition has not changed, there have been many changes in the country elevator segment of the marketing channel since 1939. First, the number of country elevators decreased from nearly 9,000 in 1939 to about 6,000 in 1959. At the same time, the average capacity of the elevators increased from somewhat less than 30,000 bushels in 1939 to an estimated 90,000 bushels in 1959.

Second, some of the country elevators grew large enough to assume the functions of terminal elevators. Therefore, many are now considered subterminal elevators. Because of the location of these elevators in the producing areas, farmers continued to find them to be their closest and most convenient outlets. Pricing advantages also appear to favor the direct shipment of grain from farms to subterminal elevators in the production areas. Although, in many cases grain was channeled into the same elevators as in 1939, it was reported as entering subterminal elevators in 1959.

As a result of the change in elevator functions, grain channeled directly from farms to subterminal elevators was considered to bypass country elevators and also to bypass the old established terminal markets. Only 5.5 million tons of all grains bypassed the country elevators in 1939. In 1959 nearly three times as much grain bypassed what are now considered country elevators.

Even though a larger amount of grain is bypassing country elevators, they are still receiving their supply of grain directly from farms. From 1939 to 1959 their receipts of all grains doubled, which is a good indication of the importance of the country elevator in grain marketing.

Table 2.--Methods of disposition of off-farm sales of grain, 1939 and 1959

Disposition	Wheat		Feed grains		Total	
	1/ 1939	1959	1/ 1939	1959	1/ 1939	1959
	Million tons	Million tons	Million tons	Million tons	Million tons	Million tons
Sales off farms	17.7	33.9	22.3	61.9	40.0	95.8
Disposition:						
To country elevators	14.3	26.7	20.1	53.1	34.4	79.8
To terminal elevators	.9	2/1.2	1.1	3/2.2	2.0	3.4
To CCC-owned storage	0	.2	0	2.2	0	2.4
To processors	2.5	2.6	1.1	0	3.6	2.6
Through agencies and secondary elevators 4/	--	3.2	--	4.4	--	7.6

1/ Compiled from report by Stokes, D. R.: Marketing Margins and Costs for Grains, grain Products and Dry Edible Beans. U. S. Dept. Agr., Tech. Bul. 934, Aug. 1947.

2/ Based on receipts at 12 large secondary markets which accounted for 100 percent of the 1939 terminal elevator receipts as shown in the Stokes study.

3/ Based on receipts at 14 large secondary markets which accounted for 75 percent of the total terminal elevator receipts in both 1939 and 1959.

4/ Buyers and sellers, or brokers, operating at terminal markets and secondary elevators, other than the 12 large secondary markets.

A comparison of the volumes of grain shipped from country elevators to comparable terminal, or secondary, elevators in 1939 and 1959 showed that the large terminal elevators were still the major method of disposition (figure 2 and table 3). However, in 1959 nearly as large a volume was shipped through agencies representing secondary elevators, processors, or exporters.

The volume of grain channeled directly to processors from country elevators has decreased. In 1959, grain was channeled through other agencies such as brokers or representatives of processing firms who operated either at the terminal markets or in the producing areas. The decrease in volume of grain channeled directly to processors was partially offset by the increased volume of feed processed at country elevators. Between 1939 and 1959 the volume of prepared animal feed processed at country elevators more than tripled.

Terminal Markets

Terminal markets are the most complex segment of the marketing channels. The terminal markets are composed of (1) a grain exchange or other meeting place for buyers and sellers, (2) several large secondary elevators, and (3) a network of marketing agencies.

The old concept of the function of terminal markets has not changed. However, the concept of some components of terminal markets has changed. For instance,

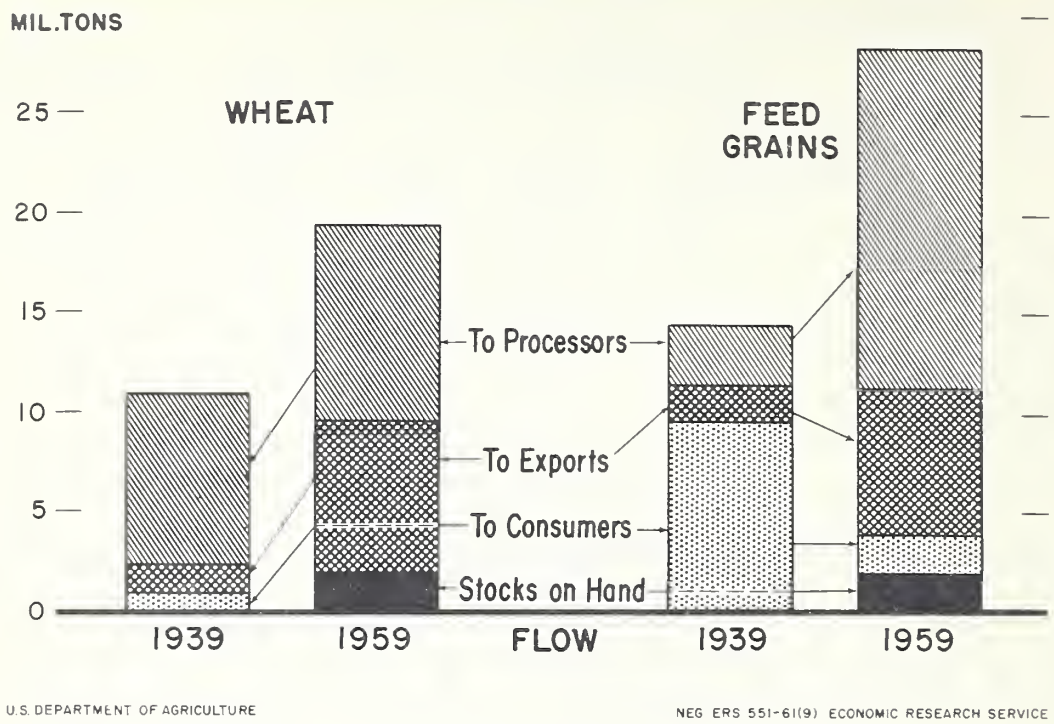


Figure 2

Stokes considered receipts for 1939 at only the largest secondary markets. 2/

Receipts at all the secondary elevators--subterminal, terminal, and port elevators--are considered in the present study because the functions are similar and the information cannot be separated. However, when comparisons are made in this section, the old definition is used to show the actual changes.

As table 4 shows, the proportion of the off-farm sales of grain that went to 14 terminal markets was smaller, even though the quantity was larger, in 1959 than in 1939. Although soybeans were not included in this study, a similar decline in the proportion sold to terminal elevators was noted. Receipts of sorghum grain (not shown in table 4) increased, but not enough to offset the trend in receipts of all grain from 1939 to 1959.

2/ Stokes, D. R., Tech. Bul. 934. These 12 large secondary markets--Chicago, Minneapolis, Duluth, St. Louis, Milwaukee, Kansas City, Omaha, Toledo, Wichita, Indianapolis, St. Joseph, and Sioux City--received 10.9 million tons of wheat or 100 percent of the terminal elevator receipts as shown in the Stokes study. These markets, plus Peoria and Hutchinson, received 10.75 million tons of corn, oats, barley, and rye in 1939 compared with the 14.25 million tons reported in the Stokes study, or approximately 75 percent of the total terminal elevator receipts.

Table 3.--Country elevators: Receipts and disposition of grain, 1939 and 1959

Disposition	Wheat		Feed grains		Total	
	1/ 1939	1959	1/ 1939	1959	1/ 1939	1959
	Million tons	Million tons	Million tons	Million tons	Million tons	Million tons
Receipts from farms	14.3	26.7	20.1	53.0	34.4	79.7
Disposition:						
Locally to farmers	--	.3	--	8.8	--	9.1
To terminal elevators	10.0	2/9.0	13.2	3/19.6	23.2	28.6
To processors	4.3	1.8	5.8	.7	10.1	2.5
To consumers	0	0	1.1	3.7	1.1	3.7
Through agencies and secondary elevators 4/	--	11.7	--	11.4	--	23.1
Stocks	0	3.9	0	8.8	0	12.7

1/ Compiled from Stokes, D. R., Tech. Bul. 934.

2/ Based on receipts at 12 large secondary markets which accounted for 100 percent of the 1939 terminal elevator receipts as shown in the Stokes study.

3/ Based on receipts at 14 large secondary markets which accounted for 75 percent of the total terminal elevator receipts in both 1939 and 1959.

4/ Buyers and sellers, or brokers, operating at terminal markets and all other secondary elevators in addition to those compared with the 1939 data.

Table 4.--Receipts of grain at 14 terminal markets in comparison with off-farm sales by volume and percentage, 1939, 1949, 1959 1/

Grain sales and receipts	1939		1949		1959	
	Volume	Percentage of off-farm sales	Volume	Percentage of off-farm sales	Volume	Percentage of off-farm sales
	Mil. tons	Percent	Mil. tons	Percent	Mil. tons	Percent
Off-farm sales	39.7	100.0	62.6	100.0	85.0	100.0
Receipts at 14 large terminal markets 2/	32.4	81.6	36.6	58.5	34.9	43.4

1/ Grains included are wheat, corn, oats, barley, and rye. Sorghum grain was omitted from the 1949 and 1959 data to allow comparisons with 1939 data.

2/ Chicago, Duluth, Hutchinson, Indianapolis, Kansas City, Milwaukee, Minneapolis, Omaha, Peoria, Sioux City, St. Joseph, St. Louis, Toledo, and Wichita.

Terminal Elevators

Terminal elevators receive nearly all their supply of grain from country and subterminal elevators or through agents, dealers, and brokers. They usually receive grain by rail but sometimes receive it by truck or water transportation. Services performed by terminal elevators include grading, pricing, and storing for later sale, primarily to processors and exporters.

The volume of grain received by the terminal elevators increased from 25.2 million tons in 1939 to 47.7 million tons in 1959 (fig. 3 and table 5). This was an expected trend in the 1939-59 period of both increased production and increased off-farm sales of grain.

Although terminal elevators disposed of grain through the same channels in 1959 as in 1939, the volumes shipped to processors more than doubled and the volume shipped to exporters increased almost 400 percent (fig. 4 and table 5). Shipments to domestic outlets other than processors declined from 10.5 million tons in 1939 to 2.0 million tons in 1959. Most of this decrease was in feed grains; it resulted from the diversion of sales to processors of animal feeds rather than to farmers, and from an increase in stocks.

Terminal Market Agencies

Terminal market agencies facilitate the collection and distribution of a large volume of grain. Agencies (1) may or may not take title to grain and (2) do not have any physical facilities for handling grain. Agencies include such groups as wholesale dealers, carlot receivers, commission merchants, and brokers.

Terminology identifying agencies is not uniform throughout the grain trade. A grain dealer in one market may be called a wholesale dealer, wholesale receiver, wholesaler, carlot receiver, or terminal merchant at another market. A commission merchant may be affiliated with a processor or a subterminal, terminal, or port elevator, or operate on his own.

Because of the complexity of these groups of agencies, all their receipts and dispositions are combined in the sections describing the 1959 marketing channels. However, these agencies do not necessarily operate out of the terminal markets. Some operate out of processing firms and others are interior buyers, who buy from country points.

Subterminal and Port Elevators

A similar complexity exists among the secondary elevators, which include subterminal elevators and port elevators in addition to terminal elevators.

Subterminal elevators are usually smaller than terminal elevators. They are distinguished from country elevators and terminal elevators in that they (1) receive 50 percent or more of their supply from other elevators or agencies and the remainder from farms, (2) have storage capacity for at least 100,000 bushels of raw grain, and (3) are usually located in markets without active grain exchanges.

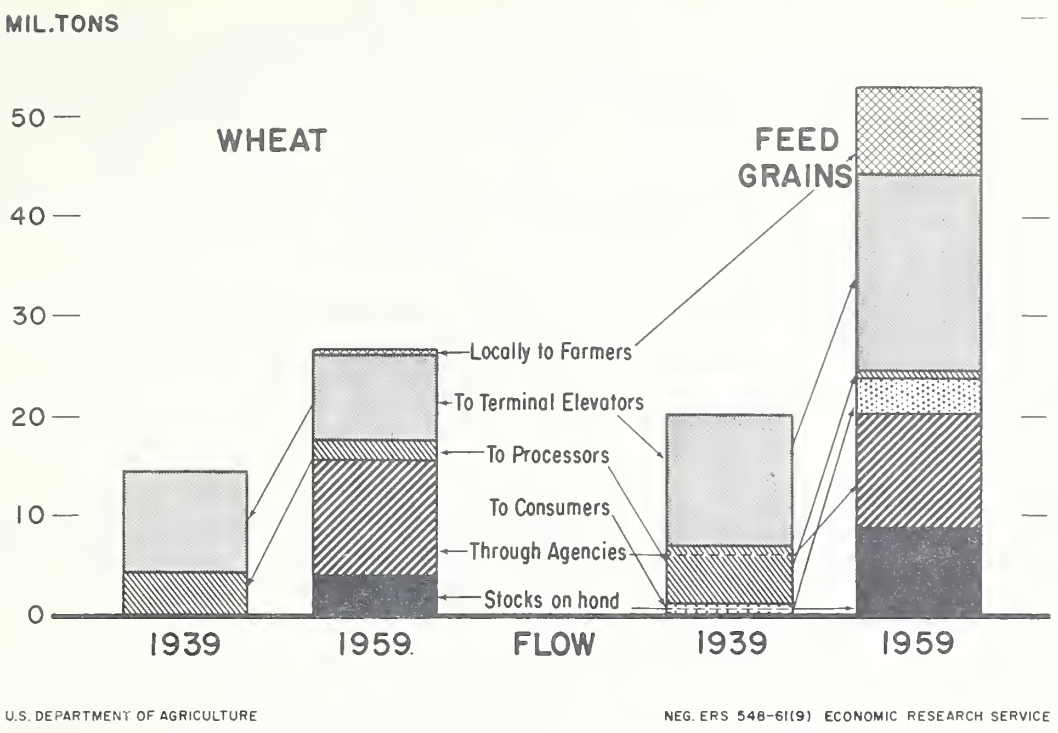


Figure 3

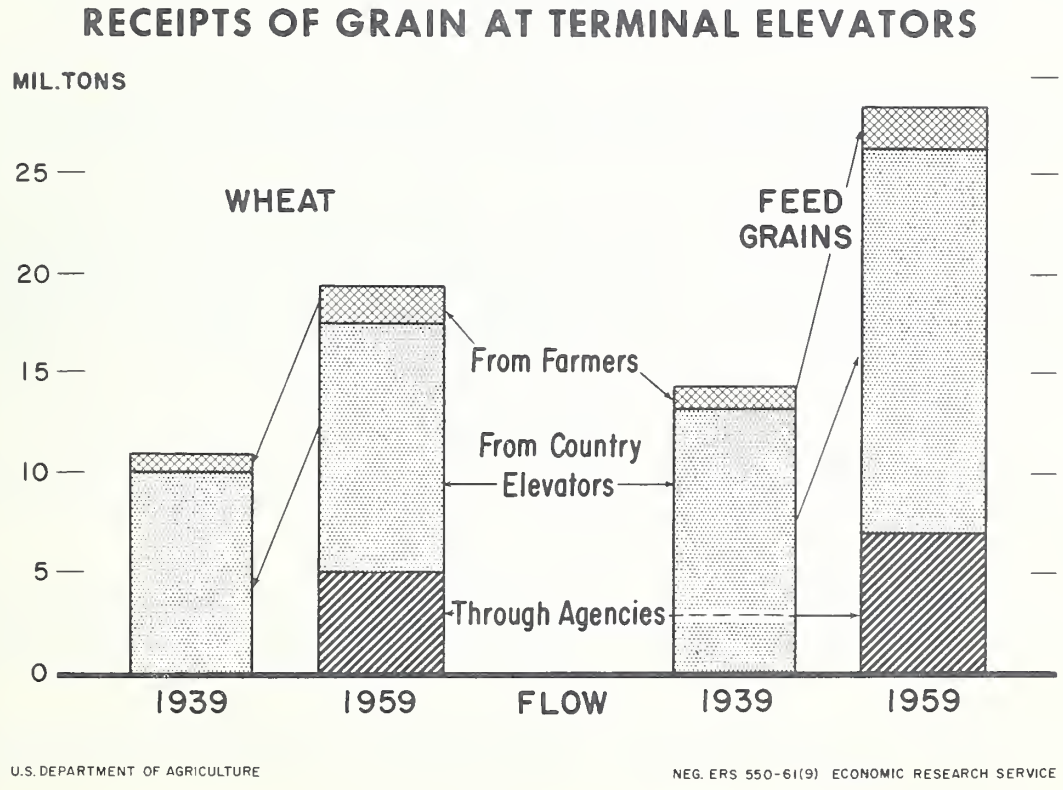


Figure 4

Table 5.--Terminal elevators: Receipts and disposition of grain, 1939 and 1959

Flow	Wheat		Feed grain		Total	
	1/ 1939	1959	1/ 1939	1959	1/ 1939	1959
	Million tons	Million tons	Million tons	Million tons	Million tons	Million tons
Receipts:						
From farmers	0.9	1.8	1.1	2.2	2.0	4.0
From country elevators	10.0	12.5	13.2	19.3	23.2	31.8
Through agencies 2/	--	5.0	--	6.9	--	11.9
Total receipts	10.9	3/19.3	14.3	3/28.4	25.2	3/47.7
Disposition:						
To processors	8.7	9.7	2.9	17.2	11.6	26.9
To exporters	1.4	7.7	1.7	7.4	3.1	15.1
To consumers	.8	0	9.7	2.0	10.5	2.0
Stocks	0	1.9	0	1.8	0	3.7
Total disposition	10.9	19.3	14.3	28.4	25.2	47.7

1/ Stokes, D. R., Tech. Bul. 934.
2/ Buyers and sellers, or brokers, operating at terminal markets and all other 1959 dispositions to all secondary elevators in addition to those compared to 1939.
3/ The 1959 volume of wheat received at terminal elevators is based on receipts at 12 large secondary markets which received 10.9 million tons of wheat in 1939 also. The 1959 volume of feed grains received at terminal elevators is based on receipts at 14 large secondary markets which accounted for 75 percent of the total terminal elevator receipts in both 1939 and 1959.

Port elevators (1) are situated geographically near water transportation facilities, (2) handle grain for export, and (3) may have as much storage capacity as subterminal or terminal elevators.

The functions of the three types of elevators overlap. Several subterminal and terminal elevators serve a dual role by handling grain both for domestic uses and for exports. Therefore, it is impossible to separate all secondary elevator receipts into port, subterminal, and terminal elevator receipts. Only the volumes of grain channeled from the elevators into domestic uses and for exports are separated in this report.

Processors

Processors can be classified broadly into two groups--food processors and feed processors. Only a small proportion of the total supply of grain is processed into industrial products.

Flour mills transform whole grain, mainly wheat, into flour, millfeeds, and by-products. The flour extraction rate of commercial wheat milling averaged 73.2 percent in 1959. 3/ Thus an average of 136.7 pounds, or 2.28 bushels, of wheat

3/ U. S. Bureau of the Census. Current Industrial Reports, Flour Milling Products Summary for 1959. Series M20A-09, May 1960.

was needed to produce 100 pounds of flour. The flour extraction rate increased about 1.6 percent between 1939 and 1959.

A total of 12.4 million tons of flour was produced from an estimated 17.4 million tons of whole wheat in 1959. This was an increase of about 1.5 million tons of wheat used for flour since 1939, despite a decrease in per capita consumption of wheat flour from 151.4 pounds in 1939 to an estimated 119.0 pounds in 1959.

The form in which most wheat reached consumers changed considerably between 1939 and 1959. Much of the flour produced in 1939 moved directly from millers to wholesalers or retailers and on to consumers, and a slightly smaller quantity was used in bakery products. In 1959 most of the flour used for domestic food was in bakery products, but the increased consumption of these products did not offset the decrease in flour consumption. As a result, domestic consumption of wheat as flour, flour mixes, and bakery products decreased from 10.25 million tons in 1939 to 9.55 million tons in 1959. There was little change in the production of cereals and of macaroni and spaghetti from 1939 to 1959.

The prepared animal-feed industry is composed of establishments which mix ingredients according to specified formulas for use as poultry or livestock feed. According to the U. S. Bureau of the Census, prepared feeds include those made from milled grains; animal, marine, and vegetable proteins; alfalfa meal, bone meal, calcium carbonate, manganese, and other mineral supplements; fish liver oils, distiller's solubles, and other vitamin supplements. Feed grains make up a little more than 50 percent of the total weight in prepared animal feeds.

The prepared animal-feed industry grew rapidly from 1939 to 1959, increasing from about 1,400 establishments in 1939 to an estimated 2,400 in 1959. The American Feed Manufacturers Association estimated that 40 million tons of prepared animal feeds were manufactured in 1959, compared with 12 million tons in 1939.

A total of 31 million tons of the off-farm sales of feed grains were returned to farms for feed in 1959 compared with about 19 million tons in 1939. Increased numbers of livestock on farms and increased production of prepared animal feeds largely explain why a larger volume was returned to farms in 1959.

Another trend apparent in this expanding industry has been the separation of terminal elevators and feed manufacturing plants. The prepared feeds industry has begun to establish plants in consumption areas; for example, an increase in the production of meat animals in the Southeastern States was followed by the establishment of feed manufacturing plants in that area. As a result, whole grain must be shipped long distances rather than processed at a central point and later shipped as prepared feeds.

Shipments Abroad

Exports of wheat (whole grain and flour) have increased greatly since 1939. Total exports in 1959 were 13.3 million tons of wheat, including that made into flour. Exports amounted to 1.4 million tons in 1939.

Also, total exports of feed grains have increased greatly since 1939, when only 1.7 million tons of feed grains were exported. In 1959, about 13 million tons, a

Table 6.--Processed wheat: Domestic disposition by type of products, and quantities exported, 1939 and 1959 1/

Disposition	1939	1959
	Million tons	Million tons
Domestic:		
Bakery products	2/4.20	3/5.60
Prepared flour and flour mixes	1.30	1.90
Flour	4.75	2.05
Macaroni and spaghetti	2/ .35	.45
Cereal	2/ .35	.20
Total	10.95	10.20
Byproducts	4.40	4.70
Exports	.65	2.55
Total wheat processed	16.00	17.45

1/ Based on U. S. Census of Manufactures, 1939 and 1958 (adjusted).
2/ Stokes, D. R., Tech Bul. 934.
3/ Single-unit retail bakeries were not included in 1958 preliminary census data. The data were adjusted to include the estimated quantity of production by these bakeries when the 1959 volume was calculated.

record level, were exported. In 1959 the amount of feed grain exported was greater than the amount that went into all domestic nonfeed uses. Exports accounted for the disappearance of only 7.6 percent of the off-farm sales of feed grains in 1939, compared with 20.4 percent in 1959.

Military procurements are mainly wheat, both for civilian relief and for military food use. Military procurements for civilian food in occupied areas are measured at the time of procurement, not at the time of shipment overseas. Military procurements began with World War II, increased sharply to about 5 million tons in 1948-49, and then decreased in 1959 to 0.2 million tons.

Territorial shipments of grain are mostly wheat, also. They are shipments outside the continental United States to the States of Alaska and Hawaii and to Puerto Rico, Guam, Samoa, Virgin Islands, and Wake Island. The volume of territorial shipments of wheat has remained constant at approximately 0.1 million tons since 1939.

Local Sales

Local sales are those made by country elevators to farmers in the general area from which the country elevators receive grain. It is assumed that most of this grain is used for animal feed and the rest for seed. In 1959 an estimated 9.0 million tons of grain were returned by country elevators to farms. Although the 1939 study does not indicate any local sales from country elevators it does show that 10.2 million tons of feed grains were consumed as a whole grain. 4/ Probably most of these feed grains were returned to farms for either feed or seed.

4/ Stokes, D. R., Tech. Bul. 934.

Stocks

Stocks of grain are stored on farms, in commercial storage, or in Government owned storage. Grain owned by the Commodity Credit Corporation is held in commercial storage facilities as well as in Government-owned facilities. These Government-owned facilities constitute a new channel through which much grain now flows on its way to the final consumer (table 7).

Stocks of grain held in all positions changed considerably between 1939 and 1959. On-farm stocks did not keep pace with total stocks. As production increased a larger inventory of grain was stored and carried over in off-farm storages. In 1939 almost all feed grain stocks were held on farms, compared with only about 75 percent in 1959. Stocks of wheat stored on farms decreased in relation to total wheat stocks, also.

Stocks of grain in terminal markets increased from 1939 to 1959 at approximately the same rate as total stocks. Stocks of all grain at interior mills, elevators, and warehouses increased from 7.3 million tons in 1939 to 52.8 million tons in 1959. Total stocks of all grains in commercial storage increased from 13.6 percent of all stocks on January 1, 1939, to 37.9 percent of all grain stocks on January 1, 1959. Large increases in stocks in commercial facilities became apparent in 1954 when CCC-owned stocks began to increase rapidly. Only the CCC-owned stocks stored in CCC-owned storage are shown separately in table 7. Most CCC-owned grain is stored in commercial facilities, accounting for much of the increased stocks in non-Government storage facilities (table 8). Private stocks also increased considerably from 1939 to 1959.

While stocks are not a part of the actual flow of grain through marketing channels their existence has caused many changes in the various segments of the grain market. When CCC-owned storage was made available, large volumes of grain were routed away from old channels. Yet, old channels continued to stock increasing amounts of grain. Many new storage facilities were built between 1939 and 1959. Some were located in new areas, and the primary function of many older elevators changed from merchandising to storage.

MARKETING WHEAT IN 1959

The flow of wheat through marketing channels for the calendar year 1959 is shown in figure 5. As wheat moves through marketing channels its value is increased by handling and processing costs. Some wheat goes completely through the marketing channels as whole grain. Other wheat is highly processed into food, feed, and industrial products, and combined with a number of other ingredients. For example, when flour extracted from whole wheat is combined with eggs, milk, sugar, and other ingredients by bakeries, the result is a pound loaf of bread of which wheat flour is only 66 percent of the total weight.

Sales Off Farms

In 1959 off-farm sales of wheat amounted to 33.9 million tons (see Table 2). This was one of the largest volumes of wheat to enter the marketing channels in the history of the United States.

Table 7.--Total stocks of wheat and feed grains, by positions, selected years, 1939-60

Year (as of Jan. 1)	Farms		Terminal markets		Interior mills, elevators, and warehouses 1/		Commodity Credit Corporation 2/		Total	
	Wheat	Feed grains 3/	Wheat	Feed grains 3/	Wheat	Feed grains 3/	Wheat	Feed grains 3/	Wheat	Feed grains 3/
	Million tons		Million tons		Million tons		Million tons		Million tons	
1939	8.2	4/66.1	3.9	4/2.3	7.3	0	0	0	19.4	4/68.4
1944	11.5	4/69.4	4.1	4/1.6	7.7	4/2.9	1.2	0	24.5	4/73.9
1949	11.6	89.3	5.0	2.4	9.2	3.7	.1	0	25.9	95.4
1954	12.8	75.6	9.5	2.3	16.4	5.9	1.4	11.3	40.1	95.1
1955	9.6	79.0	11.2	4.0	19.6	9.9	3.9	14.9	44.3	107.8
1956	9.6	83.9	12.1	4.2	21.1	12.2	4.2	16.4	47.0	116.7
1957	8.8	82.3	11.8	4.8	20.2	15.0	3.8	18.9	44.6	121.0
1958	8.8	93.2	10.8	6.2	19.6	20.7	2.2	18.0	41.4	138.1
1959	13.7	101.3	12.7	7.6	25.6	27.2	2.6	18.1	54.6	154.2
1960	9.9	105.8	5/	5/	5/44.2	5/44.4	2.1	16.1	56.2	166.3

1/ All off-farm storages not otherwise designated, including merchant mills.
2/ Owned by CCC and stored in bins or other storages owned or controlled by CCC. Other CCC-owned grain is included in the estimates by positions.
3/ Corn, oats, barley, sorghum grains, and rye.
4/ Sorghum grains are not included due to lack of storage data.
5/ Terminal market stocks are included with interior mill, elevator, and warehouse stocks.

Compiled from Supplement for 1960 to Grain and Feed Statistics, U. S. Dept. Agr., Agr. Mktg. Serv., Statis. Bul. 159; and Stocks of Grains in All Positions, U. S. Dept. Agr., Crop Rptg. Board, Jan. 26, 1960.

Table 8.--Total stocks of wheat and feed grains, by ownership of storage, selected years, 1939-60

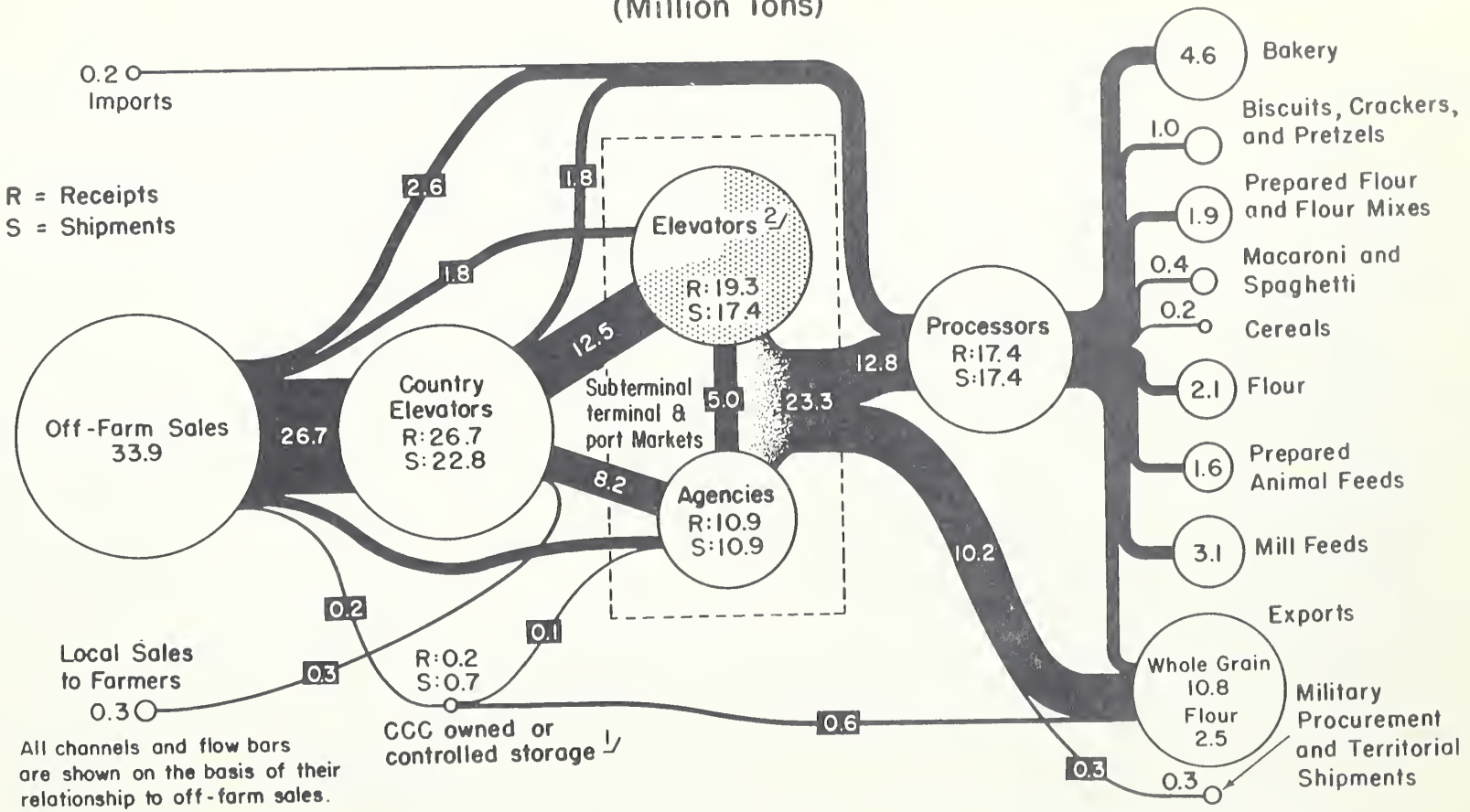
Year (as of Jan. 1)	CCC-owned stocks				Private stocks		Total stocks	
	In commercial storage 1/		In CCC-owned storage 2/					
	Wheat	Feed grains 3/	Wheat	Feed grains 3/	Wheat	Feed grains 3/	Wheat	Feed grains 3/
	Million tons		Million tons		Million tons		Million tons	
1939	0	0	0	0	19.4	4/68.4	19.4	4/68.4
1944	1.9	0	1.2	0	21.4	4/73.9	24.5	4/73.9
1949	2.1	.6	.1	0	23.7	94.8	25.9	95.4
1954	12.1	0	1.4	11.3	26.6	83.8	40.1	95.1
1955	18.5	3.4	3.9	14.9	21.9	89.5	44.3	107.8
1956	22.4	7.4	4.2	16.4	20.4	92.9	47.0	116.7
1957	21.4	12.0	3.8	18.9	19.4	90.1	44.6	121.0
1958	20.5	16.6	2.2	18.0	18.7	103.5	41.4	138.1
1959	20.7	24.8	2.6	18.1	31.3	111.3	54.6	154.2
1960	31.1	33.6	2.1	16.1	23.0	116.6	56.2	166.3

1/ Includes CCC-owned stocks in country warehouses and elevators, sub-terminal elevators, terminal elevators and in transit.
2/ Includes CCC-owned stocks in CCC-owned binsites and the maritime fleet.
3/ Included are corn, oats, barley, sorghum grains, and rye.
4/ Sorghum grains are not included due to lack of storage data.

Compiled from Supplement for 1960 to Grain and Feed Statistics, U. S. Dept. Agr., Agr. Mktg. Serv., Statis. Bul. 159, March 1961; and Stocks of Grain in All Positions, U. S. Dept. Agr., Crop Rptg. Board, Jan. 26, 1960.

MARKETING CHANNELS FOR WHEAT-1959

(Million Tons)



1/ Flow of other CCC owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments. CCC acquisitions into commercial storage totaled 14.3 million tons during 1959. CCC dispositions from commercial storage totaled 3.9 million tons during 1959.

2/ Shaded area indicates that 1959 receipts based on the 1939 definition of terminal elevators would have been approximately 71.6 percent of the subterminal, terminal, and port elevator receipts based on the 1959 definition.

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Figure 5

The 1958 record wheat production, large holdings on farms in 1958, and a higher price received by farmers in 1959 were factors contributing to the large volume of sales. Country elevators received about 79 percent, or 26.7 million tons of the off-farm sales. The remaining 21 percent, or 7.2 million tons of off-farm sales bypassed the country elevators. Eight percent, or 2.6 million tons of off-farm sales went directly to processors and 13 percent, or 4.4 million tons were channeled to subterminal, terminal, and port elevators. Less than 0.5 percent went to storage owned or controlled by CCC.

Country Elevators

Country elevators received 26.7 million tons of wheat in 1959. They shipped only 22.8 million tons, with the rest going into storage. Shipments of about 1.8 million tons bypassed the terminal markets and were channeled directly to processors. Only about 0.3 million tons were sold locally for seed and feed, leaving 20.7 million tons to flow through terminal markets.

Terminal Markets

Receipts for 1959 at terminal elevators as they are now defined and as they were defined in 1939 are both shown in figure 5. Receipts based on the 1939 definition, which included only the large secondary elevators, are shown in the shaded area. They equaled approximately 71.6 percent of the total 1959 receipts at the subterminal, terminal, and port elevators.

Subterminal, terminal, and port elevators, received 12.5 million tons from country elevators in 1959. In addition to this amount they received 1.8 million tons directly from farms and 5.0 million tons from various agencies operating at the terminal markets. The total, 19.3 million tons, was 57 percent of the off-farm sales of wheat and 77 percent of the wheat shipped by country elevators.

Other terminal market agencies received 10.9 million tons of wheat in 1959. Of the total receipts of these agencies, 2.6 million tons came directly from the farm, 0.1 million tons came from CCC binsites and the maritime fleet, and 8.2 million tons were channeled from country elevators. These terminal agencies received and handled a total of 32 percent of the off-farm sales.

Total wheat shipments from the terminal markets amounted to 23.3 million tons during 1959. About 12.8 million tons were channeled to processors and 10.5 million tons were shipped abroad.

Processors

Grain processors received, besides the 12.8 million tons from the terminal markets the following additional quantities of wheat in 1959: (1) Direct from farms, 2.6 million tons (2) direct from country elevators, 1.8 million tons; and (3) imports, 0.2 million tons. The total was 17.4 million tons or 51 percent of the off-farm sales.

Final Disposition

Total domestic consumption of wheat for food and feed accounted for 15.2 million tons or about 45 percent of the off-farm sales of wheat in 1959. Approximately 67 percent of domestic dispositions were utilized as food (see table 6). Only a small amount, 87 thousand bushels, was utilized for industrial purposes in 1959.

The remaining wheat utilized domestically was in the form of prepared animal feeds or millfeeds. In 1959, a total of 4.7 million tons were utilized in this manner. About 0.3 million tons of wheat were sold locally by country elevators.

Shipments abroad are an important channel for wheat disposition. In 1959 about 13.3 million tons were exported. Exports accounted for 39 percent of off-farm sales in 1959. Flour which was equivalent to about 2.5 million tons of wheat moved from the processors to export outlets. About 10.8 million tons of whole grain flowed into export channels from the terminal markets and from the CCC binsites. Terminal markets shipped 10.2 million tons of whole grain for exports, and 0.6 million tons were moved from CCC binsites and the maritime fleet into export channels. Military procurement and territorial shipments utilized 0.3 million tons during 1959.

Domestic consumption and shipments abroad accounted for 84 percent of off-farm sales during 1959. The remaining 16 percent was added to stocks in country, subterminal, and port terminal elevators. This increased the accumulated inventory of stocks of wheat in all positions at the end of 1959 to a total of 56.2 million tons, or approximately 1 1/2 years' production of wheat in the United States.

MARKETING FEED GRAINS IN 1959

Feed grain production totaled 151.9 million tons in 1959. About 61.8 million tons or 41 percent of the production of the five feed grains--corn, oats, barley, sorghum grain, and rye--entered marketing channels. Percentages of individual commodities marketed in 1959 were: corn, 35.0 percent; oats, 29.8 percent; barley, 71.1 percent; sorghum grain, 74.0 percent; and rye, 76.2 percent. Country elevators received 85.7 percent of the total off-farm sales of feed grains. Lesser amounts went to CCC-owned binsites, terminal agencies, and subterminal, terminal, or port elevators. About 0.6 million tons entered the United States marketing channels as imports from other countries.

About 41.0 million tons of feed grains were channeled through all segments of the terminal markets. Subterminal, terminal, and port elevators received 21.9 million tons; 19.1 million tons were channeled through various terminal agencies. The total receipts of feed grains in the terminal markets accounted for 66 percent of the total off-farm sales during 1959.

Processors utilized 27.4 million tons of feed grains during 1959. This amount was equal to 44 percent of the off-farm sales. Processors' supplies were generally channeled from country elevators, through the terminal markets, or directly from farmers. Their products were channeled to wholesalers and retailers for domestic food, feed, or industrial uses, or for shipment abroad.

About 31.5 million tons, or 51 percent of all off-farm sales of feed grains, were returned to farms for feed or seed in 1959. Including the feed grains which never left the farm, a total of 80 percent of all feed grains produced were eventually utilized on the farm. Processors of prepared animal feeds used 19.1 million tons of feed grains. Local sales of grain by country elevators totaled 8.7 million tons. The balance, 2.5 million tons, was returned in the form of millfeeds or whole grains after moving through the terminal markets or processing plants.

Feed grains used for food and industrial products totaled 6.9 million tons, or 11 percent of all off-farm sales. Shipments abroad in 1959 totaled 12.5 million

tons or 20 percent of all off-farm sales. These three methods of distribution, domestic feed or seed, domestic food, and shipments abroad, accounted for 82 percent of the off-farm sales. The remaining 18 percent of the off-farm sales was added to stocks at various segments in the marketing channels.

Corn

Corn is by far the most important feed grain that enters the United States marketing channels. In 1959, 38.3 million tons were sold off farms. About 82 percent of the corn was channeled through country elevators (figure 6). Only a small amount of corn bypassed either the country elevators or the components of the terminal markets.

An estimated 49 percent of the off-farm sales, or 18.6 million tons moved through processing plants during 1959. Corn is processed for feed, food, and industrial purposes. Processors utilized 12.6 million tons of corn in prepared animal feed during 1959. Wet-processed corn products such as cornstarch, corn sugar, corn sirup, dextrines, and corn oil accounted for an equivalent of 4.2 million tons. Dry-processed corn products such as cornmeal, flour, hominy grits, breakfast cereals, and flakes for human food and for the production of fermented malt liquors accounted for 2.8 million tons. About 1.0 million tons of corn were used in the production of alcohol and distilled spirits.

Byproducts of the wet-processing, dry-processing, and alcohol and distilled spirits production amounted to a total of 2.5 million tons (whole grain equivalent). These byproducts were used in the production of prepared animal feeds.

About 6.0 million tons of raw corn were channeled to port elevators in 1959 for export. In addition, 0.5 million tons of corn byproducts were exported in 1959. Exports of corn accounted for three-fourths of the total United States exports of feed grains during 1959.

Other flow patterns as well as changes in stocks can be seen in figure 6.

Oats

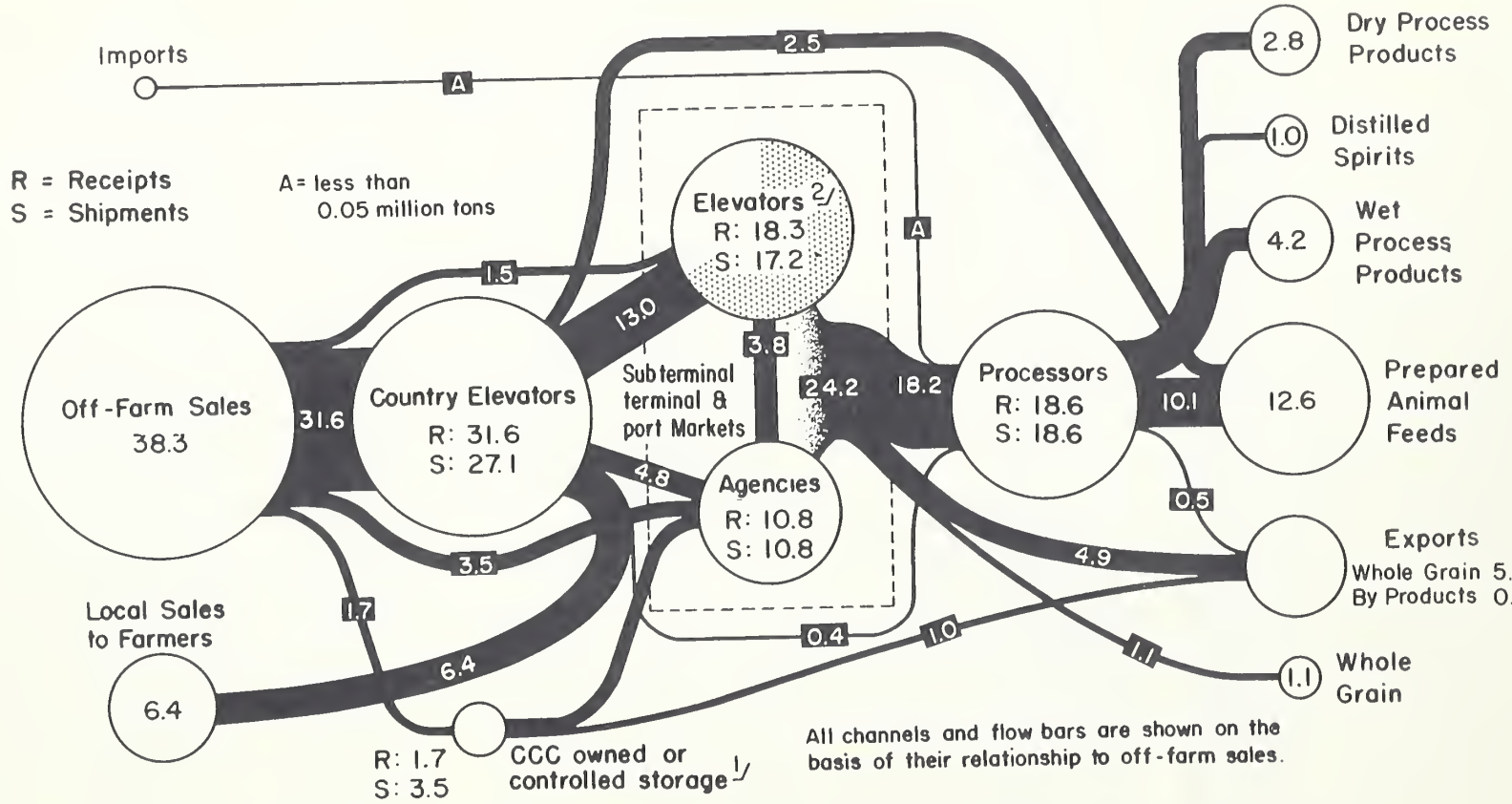
The total amount of oats flowing through the marketing channels in 1959 was 5.5 million tons. Off-farm stocks were reduced by 0.3 million tons. The remainder entered the marketing channels from sales off farms and imports (figure 7). Most of the oats were returned to farms for feed or seed. Only a small portion was used for human food or exports.

In 1959, 4.1 million tons, or 75 percent of the total utilization of oats, were returned to farms. Of that amount, 1.1 million tons were returned to farmers as whole grain through local sales by country elevators. Another 0.5 million tons were sold in mixed feeds by the country elevators. The remaining 2.5 million tons of oats that were sold for feed were channeled through subterminal elevators, terminal elevators, or agencies to manufacturers of prepared animal feeds.

In 1959, about 0.6 million tons of oats were utilized for domestic food, primarily oatmeal and rolled oats. The remaining 0.7 million tons went into export channels.

MARKETING CHANNELS FOR CORN-1959

(Million Tons)



1/ Flow of other CCC-owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments.

2/ Shaded area indicates that 1959 receipts based on the 1939 definition of terminal elevators would have been approximately 67.4 percent of the subterminal, terminal, and port elevator receipts based on the 1959 definition.

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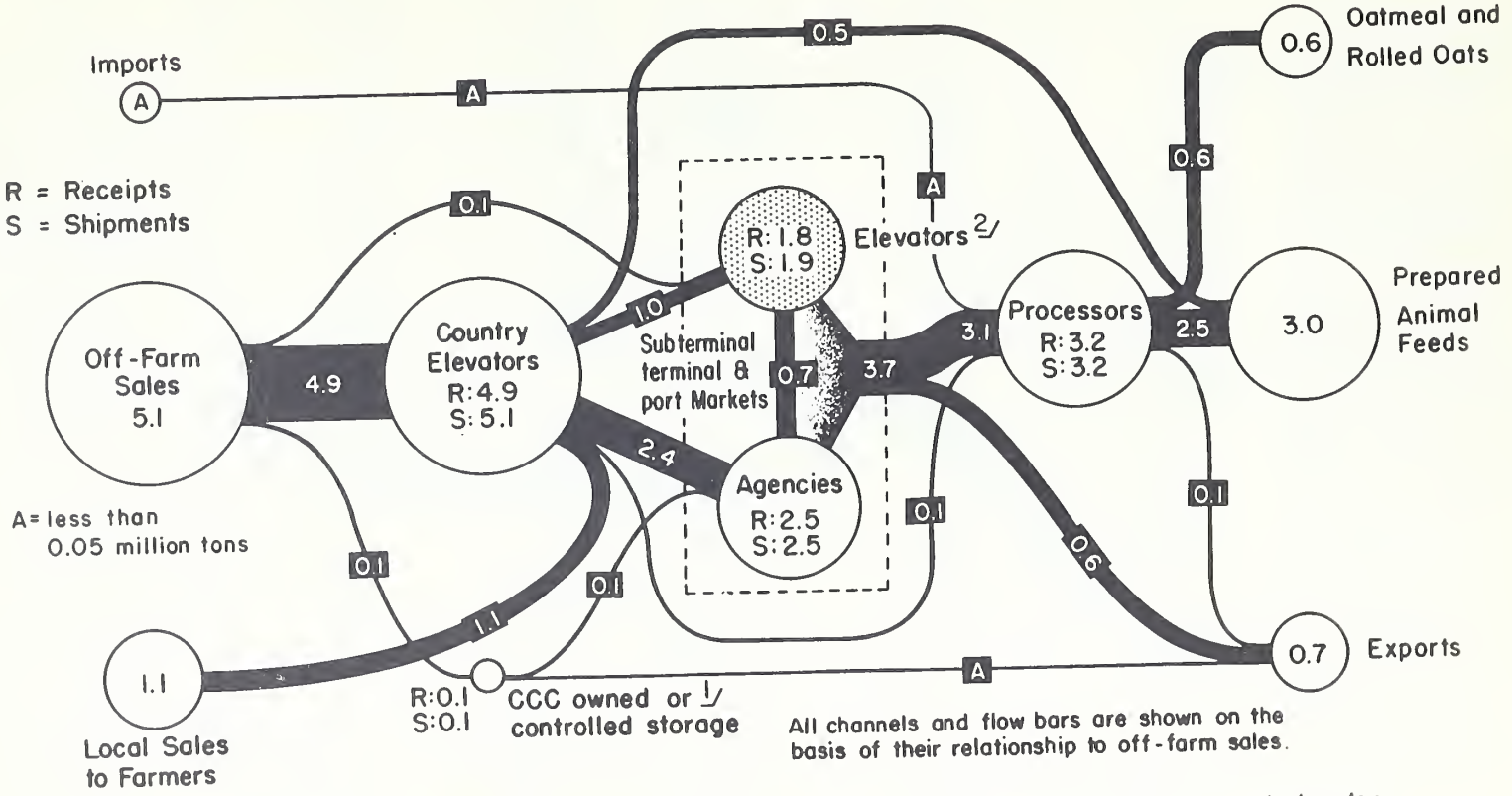
Figure 6

MARKETING CHANNELS FOR OATS-1959

(Million Tons)



1/ *Flow of other CCC-owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments.*

2/ *Shaded area indicates that 1959 receipts based on the 1939 definition of terminal elevators would have been equal to the subterminal, terminal, and port elevator receipts based on the 1959 definitions.*

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Figure 7

Barley

Country elevators receive a smaller percentage of off-farm sales of barley than of any other feed grain except corn (figure 8). In 1959 about 17 percent, or 1.2 million tons of the off-farm sales bypassed the country elevators. Because only a small volume flows through the country elevators, barley along with other small-volume grains has been recognized as a problem by some elevator operators. Barley must be segregated from other types of grain. As a result, needed bin space is sometimes occupied by a few bushels of barley when wheat begins to arrive at the country elevator.

Processors received a volume equal to one-half the off-farm barley sales in 1959. They transformed an equivalent of 1.8 million tons of barley into malt liquors, 0.2 million tons into distilled spirits and alcohol, and 2.0 million tons into prepared animal feeds.

Over one-third of the off-farm sales, or 2.8 million tons, were exported in 1959. Most barley was exported as whole grain. Some was exported as malt.

The rest of the barley either flowed into feed channels or remained in the trade channels as carryover grain. Country elevators sold 0.4 million tons back to local farmers and manufactured 0.3 million tons into prepared animal feeds.

Sorghum Grain

Sorghum grain is new to marketing channels. Since 1939, production has increased more than tenfold. In 1959 sorghum grain ranked second only to corn in volume entering marketing channels when 10.8 million tons were sold off farms (figure 9). Of that amount, 10.1 million tons were channeled through country elevators and 5.5 million tons through various segments of the terminal markets.

Few uses other than feed have been discovered for sorghum grain. Therefore, stocks are increasing rapidly. Stocks of sorghum grains increased more than stocks of any other feed grains in 1959.

Rye

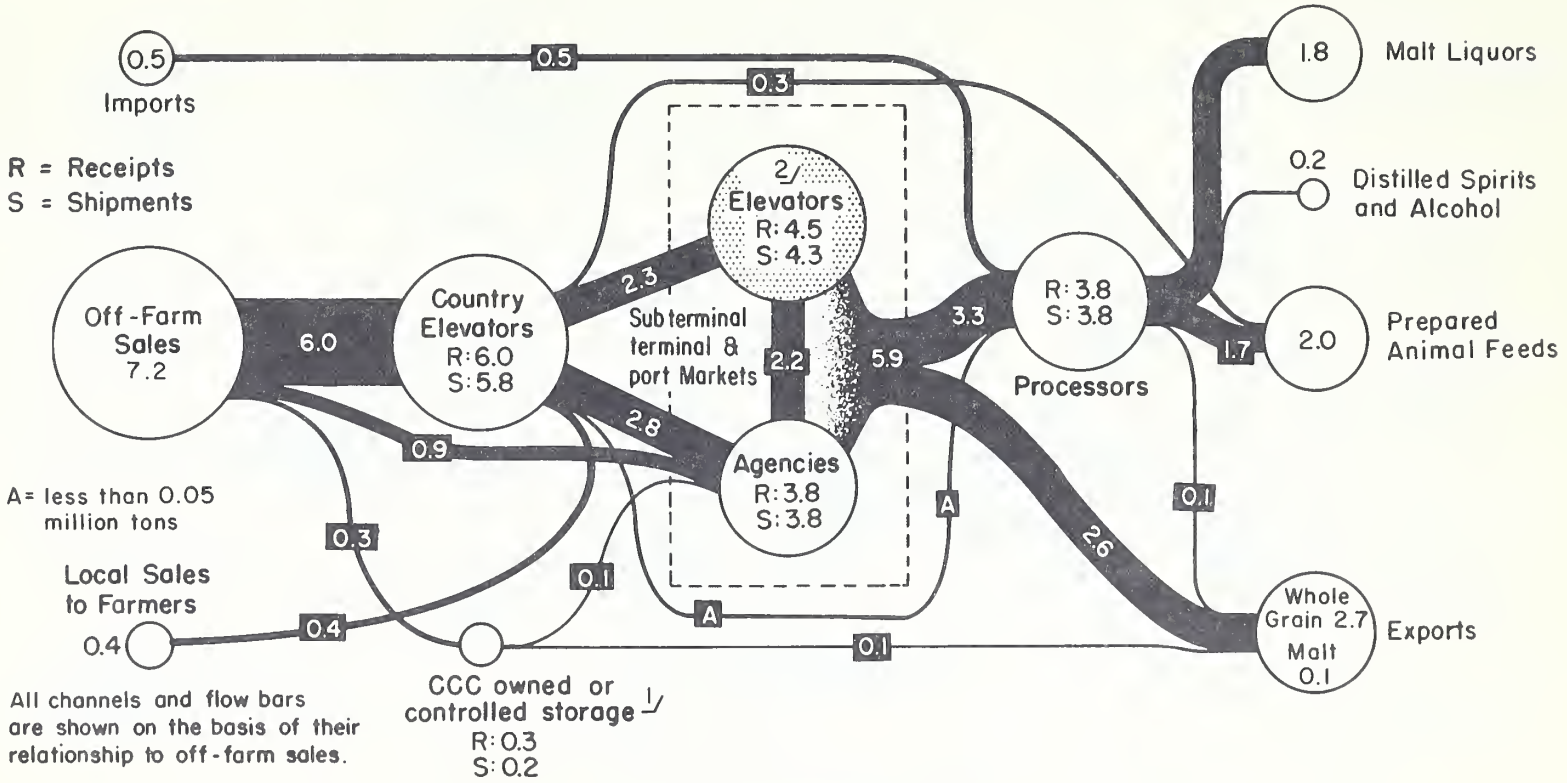
Only 0.5 million tons of rye entered the marketing channels from the farm in 1959 (figure 10). This was 76 percent of the total produced. In addition, about 0.1 million tons were imported.

Rye has been considered primarily as a bread grain in the past. However, because an estimated 71 percent of the 1959 supply was utilized for purposes other than domestic food consumption, rye is included with the feed grains in this report.

Industrial uses accounted for about 0.1 million tons during 1959, and another 0.1 million tons were exported. Feed, industry and exports accounted for a total of about 0.4 million tons of rye during 1959. The rest of the supply was used for food, or remained on hand as stocks. In 1959, this amount totaled only 0.2 million tons because production was smaller than usual by about 0.2 million tons.

MARKETING CHANNELS FOR BARLEY-1959

(Million Tons)



1/ *Flow of other CCC-owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments.*

2/ *Shaded area indicates that 1959 receipts based on the 1939 definition of terminal elevators would have been approximately 88.4 percent of the subterminal, terminal, and port elevator receipts based on the 1959 definition.*

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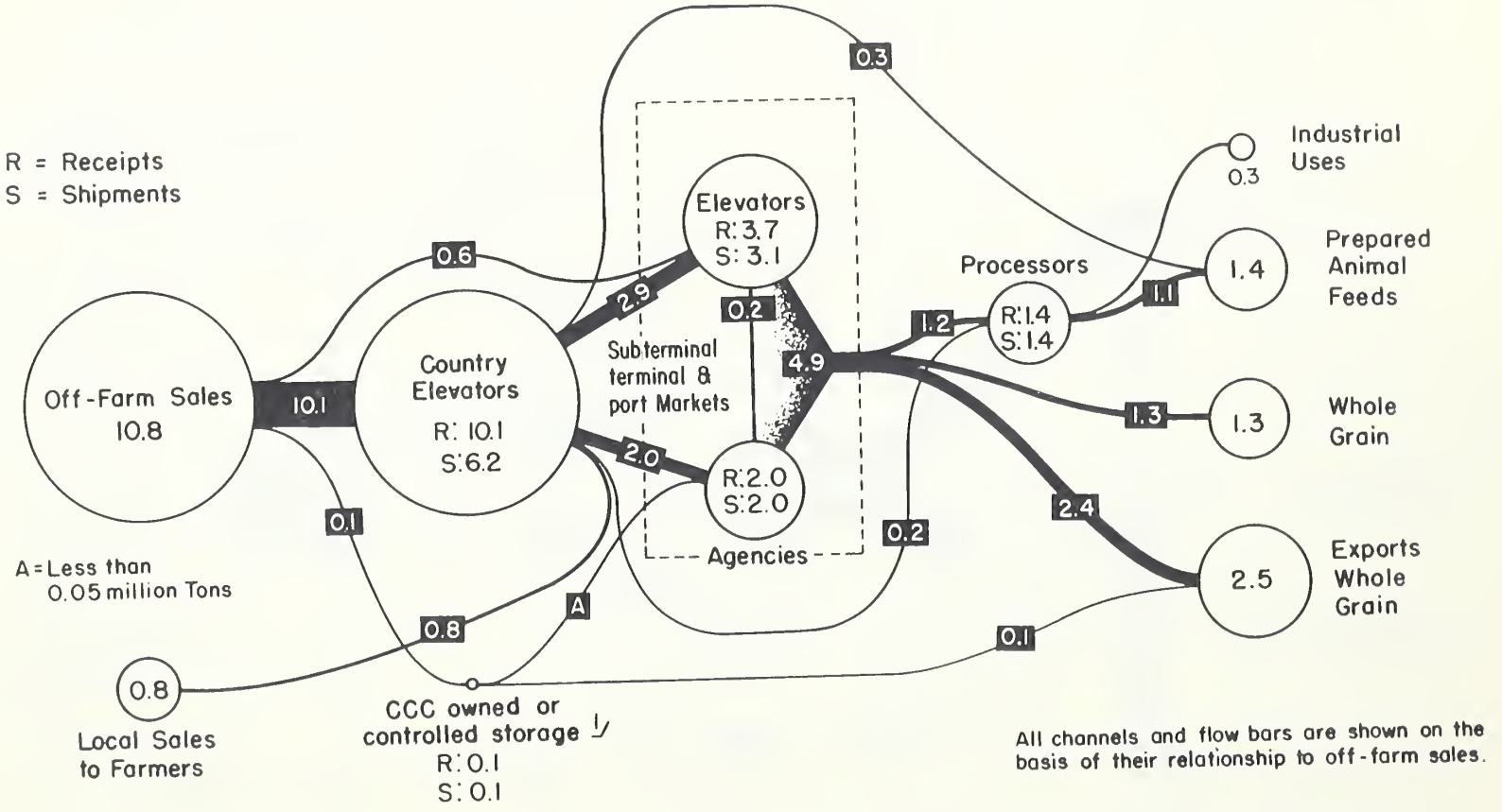
Figure 8

MARKETING CHANNELS FOR SORGHUM GRAIN-1959

(Million Tons)



1/ Flow of other CCC-owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments.

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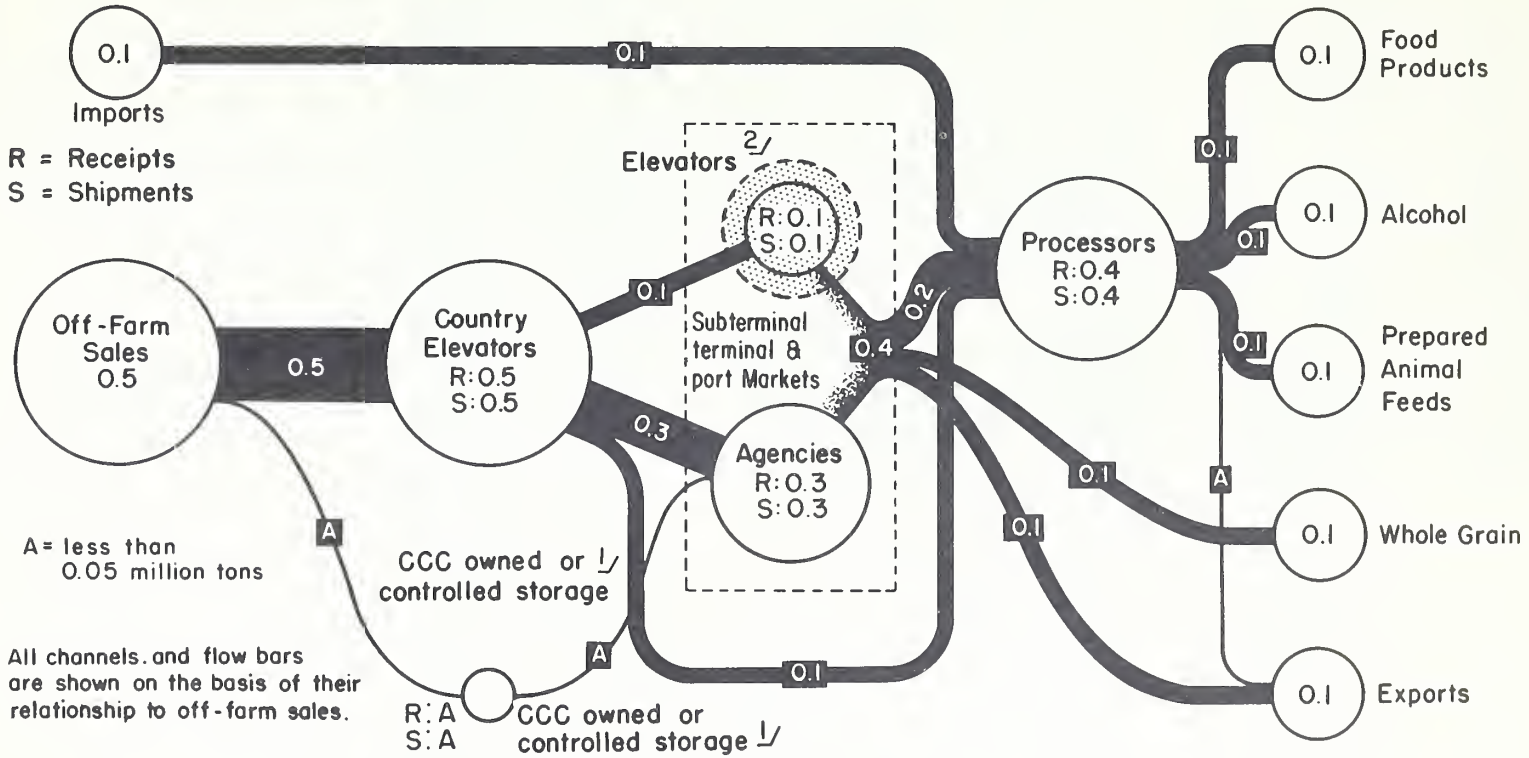
Figure 9

MARKETING CHANNELS FOR RYE-1959

(Million Tons)



1/ *Flow of other CCC-owned grain is included in the country and subterminal, terminal, and port elevator receipts and shipments.*

2/ *Shaded area indicates that 1959 receipts based on the 1939 definition of terminal elevators would have been approximately 2.6 times larger than the subterminal, terminal, and port elevator receipts based on the 1959 definition.*

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Figure 10

IMPLICATIONS

Uniform definitions are a necessity for effective communication. Lack of thorough understanding of trade terminology leads to incorrect conclusions and decisions.

Conflicting definitions are used in the grain trade. For example, "terminal elevators" sometimes means only large secondary elevators and sometimes all terminal, subterminal, and port elevators. The term "country elevators" may include both country and subterminal elevators.

Definitions can be uniform without being unchangeable. As marketing channels change, terms used to describe new structures and patterns of flow must be changed.

During 1959 wheat receipts at all the secondary elevators and agencies totaled a little more than 30 million tons. Receipts at 12 of the larger markets equaled only 63 percent of total receipts at secondary elevators and agencies compared to nearly 100 percent of the receipts in 1939. The trend is toward decentralization of the secondary segments of the wheat market. Thus, while wheat prices at terminal markets are still based on those elevators which received a large majority of the wheat volume in 1939, much of the increased marketings in 1959 was being handled and priced in the decentralized markets. In addition, agencies and secondary elevators in the producing regions can probably operate on different price margins than the larger secondary elevators in the old market centers. This is possible because bypassing both the country elevators and the old terminal elevators tends to reduce transportation and other marketing costs. As a result, published terminal market prices for wheat are not as representative of actual prices as they were in 1939.

Decentralization of the secondary segments of the feed grain market has not been as pronounced as for wheat. However, there has been a shift away from the old terminals in favor of other large secondary markets. In time a larger volume of feed grains may flow through the subterminal elevators in the production areas, as in the case of wheat.

Two kinds of changes occurred in the marketing channels during the period 1939-59. One kind of change was in market organization and definitions, affecting the way grain movements were reported although the grain continued to flow through the same channels. Some establishments did not perform the same functions in 1959 as in 1939. Other establishments gained or lost volumes of business. For example, some country elevators became larger. The increased volume of business caused them to take on new functions and to be reclassified as subterminal elevators. In this example, the flow of grain was not shifted physically, but the grain was considered in 1959 as entering subterminal elevators instead of country elevators. Often in the process of sale it bypassed either the country elevators or the old terminal elevators or both. As a result, in 1959 a slightly smaller proportion of off-farm sales was channeled into country elevators and a slightly larger proportion was channeled directly to subterminal elevators than in 1939. Another result was the adoption of different merchandising techniques and pricing policies as smaller country elevators went out of business. These types of changes, although slow, were apparent over the period of time covered in this study.

These changes reflect some of the trends with which grain marketing firms must contend in the future. Changes in the size of farms, increased use of formula feeds,

and improved transportation facilities are important causes of changes in market organization. Individual firms need to study local conditions that are applicable to their business. Most segments of the marketing channels will need at least partial reorganization because of changes in the market structure.

The second type of change was the creation of new channels, mainly beyond the country elevator level. CCC-owned storage facilities are a relatively new channel now being used. Other new channels resulted from changes in the form in which wheat reaches the consumer and from the need to move feed grains into nonproduction areas of the United States for the manufacture of prepared animal feeds. Because of these new channels, smaller volumes of grain flow through old channels in periods of constant off-farm sales.

With the development of new channels arises the need for new pricing policies, new transportation facilities, and new operational facilities. New grain marketing channels must serve a need and command a supply of grain to satisfy this need. Correct timing is necessary for firms using new marketing channels. This will depend largely on the financial and competitive ability of the individual firm, assuming that perfect knowledge of the grain trade is available. A firm in a strong position can choose to be either a leader or a lagger in making changes and creating new marketing channels. A firm in a weak position may have to be satisfied to let the stronger firms pioneer changes in the grain trade.

Industry executives must understand changes of the recent past if they are to make intelligent decisions on future operations. They must remember that the flow of grain is not a simple two-dimensional operation, as portrayed in the flow charts. In reality the flow of grain is much more complex. There are many plants or establishments represented by each island on a flow chart and there are several modes of transportation for grain. Changes in marketing channels involve not only time, but also the form in which grain is handled and places to which it is shipped.

Continual changes in marketing channels can be expected. Vertical and horizontal integration, Government programs to control supply, contract arrangements and direct buying, changes in rail rates, improved Federal highway systems, improved overseas outlets, new methods of storage, and utilization research are some of the factors that will affect the flow of grain through marketing channels in the future. Most of the resulting changes in marketing channels, however, will be gradual.

Growth Through Agricultural Progress